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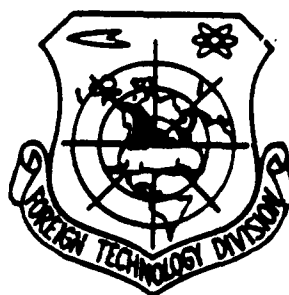


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LATHE FOR THE FABRICATION OF OPTICAL SURFACES

by

V.V. Gorelik, N.P. Zakaznov and B.D. Gorelik



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## EDITED TRANSLATION

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LATHE FOR THE FABRICATION OF OPTICAL SURFACES

By: V.V. Gorelik, N.P. Zakaznov and B.D. Gorelik

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# U. S. BOARD ON GEOGRAPHIC NAMES transliteration SYSTEM

Block	Italic	Transliteration	Block	Italic	Transliteration
А а	<i>А а</i>	A, a	Р р	<i>Р р</i>	R, r
Б б	<i>Б б</i>	B, b	С с	<i>С с</i>	S, s
В в	<i>В в</i>	V, v	Т т	<i>Т т</i>	T, t
Г г	<i>Г г</i>	G, g	У у	<i>У у</i>	U, u
Д д	<i>Д д</i>	D, d	Ф ф	<i>Ф ф</i>	F, f
Е е	<i>Е е</i>	Ye, ye; E, e*	Х х	<i>Х х</i>	Kh, kh
Ж ж	<i>Ж ж</i>	Zh, zh	Ц ц	<i>Ц ц</i>	Ts, ts
З з	<i>З з</i>	Z, z	Ч ч	<i>Ч ч</i>	Ch, ch
И и	<i>И и</i>	I, i	Ш ш	<i>Ш ш</i>	Sh, sh
Й й	<i>Й й</i>	Y, y	Щ щ	<i>Щ щ</i>	Shch, snch
К к	<i>К к</i>	K, k	Ъ ъ	<i>Ъ ъ</i>	"
Л л	<i>Л л</i>	L, l	Ы ы	<i>Ы ы</i>	Y, y
М м	<i>М м</i>	M, m	Ь ь	<i>Ь ь</i>	'
Н н	<i>Н н</i>	N, n	Э э	<i>Э э</i>	E, e
О о	<i>О о</i>	O, o	Ю ю	<i>Ю ю</i>	Yu, yu
П п	<i>П п</i>	P, p	Я я	<i>Я я</i>	Ya, ya

\*ye initially, after vowels, and after ъ, ы; e elsewhere.  
When written as ё in Russian, transliterate as yë or ë.

## RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English	Russian	English	Russian	English
sin	sin	sh	sinh	arc sh	sinh <sup>-1</sup>
cos	cos	ch	cosh	arc ch	cosh <sup>-1</sup>
tg	tan	th	tanh	arc th	tanh <sup>-1</sup>
ctg	cot	cth	coth	arc cth	coth <sup>-1</sup>
sec	sec	sch	sech	arc sch	sech <sup>-1</sup>
cosec	csc	csch	csch	arc csch	csch <sup>-1</sup>

## Russian English

rot curl  
lg log

## LATHE FOR THE FABRICATION OF OPTICAL SURFACES

Authors of invention: V. V. Gorelik, N. P. Zakaznov  
and B. D. Gorelik

Applicant: Krasnogorskiy Machine Shop

Lathes are known for the fabrication of optical surfaces of parts which are mounted with the capability of rotation in a rocking headstock.

The purpose of the invention is the obtaining of surfaces of the fourth order on lathes with a mechanism for the rectilinear back and forth shifting of the carrier. For this in the proposed lathe above the faceplate in the headstock housing an additional annular faceplate is secured which ensures linear contact with the tool.

For the possibility of obtaining different surfaces the headstock is made rotatable relative to the shaft, coinciding with the shaft of the spindle.

The drawing shows the layout of the proposed lathe.

The lathe spindle with the billet 1 secured in it is connected with the help of a conical pair 2 with the shaft which is perpendicular to the shaft of the spindle. In turn the pair 2 through reduction gear 3 is connected with the output of electric motor 4. The spindle housing 5, on which an additional annular faceplate 6 is mounted, has its own drive 7 for vibrational motion. The carrier with tool 8 secured on it in a pivoted arrangement, is connected

with the help of a lever with the rectilinear guides 9, and it also has a drive 10 for rectilinear back and forth shifting. The lathe spindle unit with drives is mounted on base 11 on shaft 12, coinciding with the shaft of the spindle. This unit is connected with the base with the help of worm pair 13. The upper unit of the lathe is mounted on bracket 14.

The lathe operates in the following manner.

Rotational motion is transferred to the billet 1 through pair 2 and reduction gear 3 from the electric motor 4. Simultaneously with this motion the billet accomplishes vibrational motion together with the spindle housing 5 with faceplate 6 secured on it relative to the shaft which is perpendicular to the spindle shaft.

This vibrational motion is realized from drive 7. In the process of machining the billet the tool 8, secured on the carrier in a pivoted arrangement, accomplishes back and forth shifting in guides 9 from drive 10. In this case the tool carrier is shifted in a plane which does not coincide with the plane in which the vibrational motion of the spindle is taking place.

The necessary angle between these planes, the magnitude of which depends on the levelling of the surface being machined, is set by turning the spindle unit relative to base 11 around shaft 12 with the help of pair 13.

#### Object of Invention

1. A lathe for fabrication of optical surfaces of parts, mounted on the faceplate with the capability of rotation in a rocking headstock, characterized by the fact that for the purpose of obtaining surfaces of the fourth order on lathes with a mechanism for rectilinear back and forth shifting of the carrier, above the faceplate in the headstock housing an additional annular faceplate is secured.

2. The lathe in item 1 is characterized by the fact that for the purpose of providing the capability of obtaining different surfaces the headstock is made rotatable relative to the shaft which coincides with the spindle shaft.

